

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.





U. S. DEPT. OF AGRICULTURE  
NATIONAL AGRICULTURAL LIBRARY

JUL 16 1964

CURRENT SERIAL RECORDS

**WATER SUPPLY OUTLOOK**  
and  
**FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS**  
for  
**ARIZONA**

UNITED STATES DEPARTMENT of AGRICULTURE--SOIL CONSERVATION SERVICE,  
SALT RIVER VALLEY WATER USERS ASSOCIATION  
and  
ARIZONA AGRICULTURAL EXPERIMENT STATION

Data included in this report were obtained by the agencies  
named above in cooperation with the Federal, State and pri-  
vate organizations listed on the last page of this report.

||||||| AS OF |||||  
**JAN. 15, 1964**



# UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

## To Recipients of Water Supply Outlook Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from advance estimates of the streamflow.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, up to 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

Streamflow forecasts are obtained by a comparison of total or maximum snow accumulation, as measured by snow water equivalent, to the subsequent spring and summer or snowmelt season runoff over a period of years. The snow water equivalent measured in selected snow courses provides most of the index to the streamflow forecast for the following season. More accurate forecasts are usually obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast procedure. Early season forecasts assume average climatic conditions through the snowmelt season.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions. Soil Conservation Service Reports may be secured from Water Supply Forecasting Unit, Soil Conservation Service, P.O. Box 2807, Portland, Oregon 97208.

### PUBLISHED BY SOIL CONSERVATION SERVICE

<u>REPORTS</u>	<u>ISSUED</u>	<u>LOCATION</u>	<u>COOPERATING WITH</u>
RIVER BASINS			
WESTERN UNITED STATES	MONTHLY (FEB.-MAY)	PORTLAND, OREGON	ALL COOPERATORS
BASIC DATA SUMMARY	OCTOBER 1	PORTLAND, OREGON	ALL COOPERATORS
STATES			
ALASKA	MONTHLY (MAR.-MAY)	PALMER, ALASKA	ALASKA S.C.D.
ARIZONA	SEMI-MONTHLY (JAN.15 - APR.1)	PHOENIX, ARIZONA	SALT R. VALLEY WATER USERS ASSOC. ARIZ. AGR. EXP. STATION
COLORADO AND NEW MEXICO	MONTHLY (FEB.-MAY)	FORT COLLINS, COLORADO	COLO. STATE UNIVERSITY COLO. STATE ENGINEER N. MEX. STATE ENGINEER
IDAHO	MONTHLY (JAN.-JUNE)	BOISE, IDAHO	IDAHO STATE RECLAMATION ENGINEER
MONTANA	MONTHLY (JAN.-JUNE)	BOZEMAN, MONTANA	MONT. AGR. EXP. STATION
NEVADA	MONTHLY (JAN.-MAY)	RENO, NEVADA	NEVADA DEPT. OF CONSERVATION AND NATURAL RESOURCES - DIVISION OF WATER RESOURCES
OREGON	MONTHLY (JAN.-JUNE)	PORTLAND, OREGON	OREG. STATE UNIVERSITY OREGON STATE ENGINEER
UTAH	MONTHLY (JAN.-JUNE)	SALT LAKE CITY, UTAH	UTAH STATE ENGINEER
WASHINGTON	MONTHLY (FEB.-JUNE)	SPOKANE, WASHINGTON	WN. STATE DEPT. OF CONSERVATION
WYOMING	MONTHLY (FEB.-JUNE)	CASPER, WYOMING	WYOMING STATE ENGINEER

### PUBLISHED BY OTHER AGENCIES

<u>REPORTS</u>	<u>ISSUED</u>	<u>AGENCY</u>
BRITISH COLUMBIA	MONTHLY (FEB.-JUNE)	WATER RESOURCES SERVICE, DEPT. OF LANDS, FOREST AND WATER RESOURCES, PARLIAMENT BLDG., VICTORIA, B.C., CANADA
CALIFORNIA	MONTHLY (FEB.-MAY)	CALIF. DEPT. OF WATER RESOURCES, P.O. BOX 388, SACRAMENTO, CALIF.

**WATER SUPPLY OUTLOOK**  
and  
**FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS**  
for  
**ARIZONA**

(Salt, Verde, Gila and Part of Lower Colorado River Basin)

*Report prepared by*

RICHARD W. ENZ...SNOW SURVEY SUPERVISOR  
SOIL CONSERVATION SERVICE  
ROOM 6029 FEDERAL BUILDING  
PHOENIX, ARIZONA 85025

*Issued by*

ROBERT V. BOYLE  
STATE CONSERVATIONIST  
SOIL CONSERVATION SERVICE

VICTOR I. CORBELL  
PRESIDENT  
SALT RIVER VALLEY WATER USERS ASSOCIATION







# INDEX to SNOW COURSES and SOIL MOISTURE STATIONS

NUMBER ***	NAME	SEC	TWP	RGE ***	ELEVATION	RIVER BASIN
9S1	Baldy (p)	28	7N	27E	9125	Salt-Little Colorado
10T1	Bear Wallow	6	12S	16E	8100	Gila
9S6	Beaver Head	13	4N	30E	8000	Salt-San Francisco
9S10-*	Black River Divide	11	6N	27E	9100	Salt-Little Colorado
12N1	Bright Angel	34	33N	3E	8400	Lower Colorado
12R1	Camp Wood	3	16N	6W	5700	Verde-Bill Williams
10R7-M	Canyon Creek #2	18	11N	15E	7500	Salt-Little Colorado
11R2-M	Casner Park	19	18N	8E	6930	Verde
12P1-M	Chalender	27	22N	3E	7100	Verde
12R6	Copper Basin Divide (p)	23	13N	3W	6720	Verde-Bill Williams
10R8-*	Corduroy Creek	Lat. 34°07'	N. Long. 110°08'W.	§ 6000		Salt
9S7	Coronado Trail	26	5N	30E	8000	Salt-San Francisco
10R6	Forest Dale	2	9N	21E	6430	Salt-Little Colorado
11P2	Fort Valley (p)	22	22N	6E	7350	Verde-Little Colorado
9R5	Ft. Apache	18	7N	27E	9160	Salt-Little Colorado
8S1-M	Frisco Divide	31	6S	20W****	8000	San Francisco-Gila
12R4	Gaddes Canyon	11	15N	2E	7600	Verde-Agua Fria
10R5	Gentry	36	11N	15E	7600	Salt
11P1	Grand Canyon	21	30N	4E	7500	Lower Colorado
9S11	Hannagan Meadows (p)	19	3N	29E	9090	Salt
11R5	Happy Jack	30	17N	9E	7630	Verde
10R4	Heber (p)	28	11N	15E	7600	Salt-Little Colorado
8S9-A	Hummingbird	19	11S	17E	10,550	San Francisco-Gila
8S6	Ice King	6	11S	18W****	8020	San Francisco-Gila
7S2	Inman	6	11S	10W****	7800	Gila
12R2	Iron Springs	22	14N	3W	6200	Verde-Bill Williams
9S2	Maverick Fork (p)	13	6N	27E	9050	Salt
9R2-M	McNary	14	8N	23E	7200	Salt-Little Colorado
9R1	Milk Ranch	28	8N	23E	7000	Salt
12R3	Mingus Mountain	3	15N	2E	7100	Verde-Agua Fria
8S2	Mogollon	2	11S	19W****	7000	San Francisco-Gila
11R4	Mormon Lake	13	18N	8E	7350	Verde-Little Colorado
11R3-M	Mormon Mountain (p)	14	18N	8E	7500	Verde
11R1-M	Munds Park	7	18N	7E	6500	Verde
11P5-M	Newman Park	25	19N	6E	6750	Verde
9S4	Nutriosio	23	6N	30E	8500	San Francisco-Little Colorado
9S5	Pacheta	At Town of Maverick, Ariz.		§ 7800		Salt
8S7	Redstone Trail	5	11S	18W****	8600	San Francisco-Gila
10T2	Rose Canyon	15	12S	16E	7300	Gila
8S8	Silver Creek Divide	4	11S	18W****	9000	San Francisco
11P4	Snow Bowl (p)	36	23N	6E	10,260	Verde
9S8	State Line	6	6S	21W****	8000	Gila-San Francisco
12R5	White Spar	19	13N	2W	6000	Verde
8S10-A	Whitewater	19	11S	17E	10,750	Gila
13P1	Willow Ranch	16	21N	11W	5000	Bill Williams
10S1	Workman Creek	33	6N	14E	6900	Salt

\* SOIL MOISTURE STATION ONLY

\*\* NUMBER INDICATES LOCATION OF SNOW COURSE WITHIN COORDINATE RECTANGLE.  
THUS 9N1 IS COURSE #1 IN COORDINATE RECTANGLE 9N.

\*\*\* ALL IN GILA AND SALT RIVER BASE AND MERIDIAN EXCEPT WHERE OTHERWISE INDICATED.

\*\*\*\* NEW MEXICO PRINCIPAL MERIDIAN

M SOIL MOISTURE STATION INSTALLED ON OR IN VICINITY OF SNOW COURSE.

§ UNSURVEYED

(p) STORAGE GAGE INSTALLED ON OR IN VICINITY OF SNOW COURSE.

A AERIAL SNOW DEPTH GAGE



## ARIZONA WATER SUPPLY OUTLOOK

January 15, 1964

\* \* \* \* \*  
\*  
\* The 1964 Water Supply Outlook is generally fair to \*  
\* poor for Arizona. Snow cover is the lowest in the \*  
\* twenty-six years of snow measurements. However, \*  
\* carry-over storage is about average for this time \*  
\* of year. If this year continues dry, carry-over \*  
\* water supplies will be depleted for next year. \*  
\*  
\* \* \* \* \*

SNOW COVER: Snow cover on the mountains in Arizona is almost non-existent, being the lowest recorded on the snow courses in the twenty-six years of snow measurements for January 15. No snow containing more than one inch of water was measured on any course in Arizona. The most snow measured on any course was 11 inches containing 2.8 inches of water; this was in the Mogollon Mountains in New Mexico on the Gila River Watershed. The existing snow pack cannot be expected to contribute any appreciable runoff to the base flow in the rivers.

RESERVOIR STORAGE: Storage in the Salt River Project Reservoirs is slightly over average for this date, being 114% of normal and 38% of capacity. Storage in other reservoirs serving central Arizona is not as good however. In the San Carlos Reservoir, storage is only 76% of average; and 80% for the Lake Pleasant Reservoir. Lyman Reservoir contains 176% of normal storage for this time of year or 32% of capacity.

SOIL MOISTURE: Soil moisture in the mountain areas has been maintained at about an average level with summer and fall rains. Although the watershed cannot be called primed for runoff, only normal losses are expected from the following precipitation.

PRECIPITATION: December precipitation reported by the U. S. Weather Bureau shows much below average precipitation in all sections of Arizona. Although fall precipitation was better, and brought the water year precipitation to near normal in the eastern mountains, there is little snow left for future runoff.



STATUS OF ARIZONA RESERVOIR STORAGE - ABOUT JANUARY 15, 1964

SUB- WATERSHED and/or STREAM	RESERVOIR	USABLE CAPACITY 1000s AC. FT.	USABLE STORAGE - 1000s ACRE FEET			
			1964	1963	1962	15-Year Average 1943-57
<u>GILA RIVER SUB-WATERSHED</u>						
Agua Fria	Lake Pleasant	163.8	16.3	2.7	11.1	20.5
Granite	Watson Lake	4.7	3.8	0.6	--	--
Gila	San Carlos	1,206.0	60.8	66.5	77.7	80.3
Verde	Bartlett	179.5	10.0	20.0	35.2	27.3
Verde	Horseshoe	142.8	8.2	1.6	15.7	14.6 *
Salt	Roosevelt	1,382.0	435.5	652.6	551.2	421.2
Salt	Apache	245.0	238.6	232.9	149.6	181.2
Salt	Canyon	58.0	51.7	53.4	53.1	31.9
Salt	Saguaro	70.0	55.5	41.4	65.1	24.4

LOWER COLORADO RIVER SUB-WATERSHED

Colorado	Lake Havasu	619.4	521.1	519.1	540.9	551.9
Colorado	Lake Mohave	1,810.0	1,620.2	1,731.0	1,661.0	1,555.9 *
Colorado	Lake Mead	27,207.0	15,745.0	22,891.0	17,977.0	17,849.0
Little Colo.	Lyman	30.6	9.7	12.8	0.9	5.6
Little Colo.	Show Low Lake	5.1	0.8	0.5	0.1	--

\* Average is for less than 15 years of record in the 1943-57 period.





ARIZONA SOIL MOISTURE - ABOUT JANUARY 15, 1964

Drainage Basin and Station	<u>1/</u> Station Number	Elev.	Soil Profile in Inches		Date	Soil Moisture Content in Inches--about JAN. 15			
			Depth	Cap.		1964	1963	1962	Avg.

GILA RIVER

Frisco Divide	8S1-M	8000	48	13.3	No Report	10.0	11.6	11.4
---------------	-------	------	----	------	-----------	------	------	------

SALT RIVER

Black River Divide	9S10-*	9100	48	16.8	1/15	11.8	11.3	11.6	10.5
Canyon Creek #2	10R7-M	7500	48	18.3	1/14	12.9	11.6	13.2	12.6
Corduoy Creek	10R8-*	6000	48	16.0	1/15	6.1	9.3	10.1	8.3
McNary	9R2-M	7200	48	16.3	1/15	6.9	7.7	7.9	8.9

VERDE RIVER

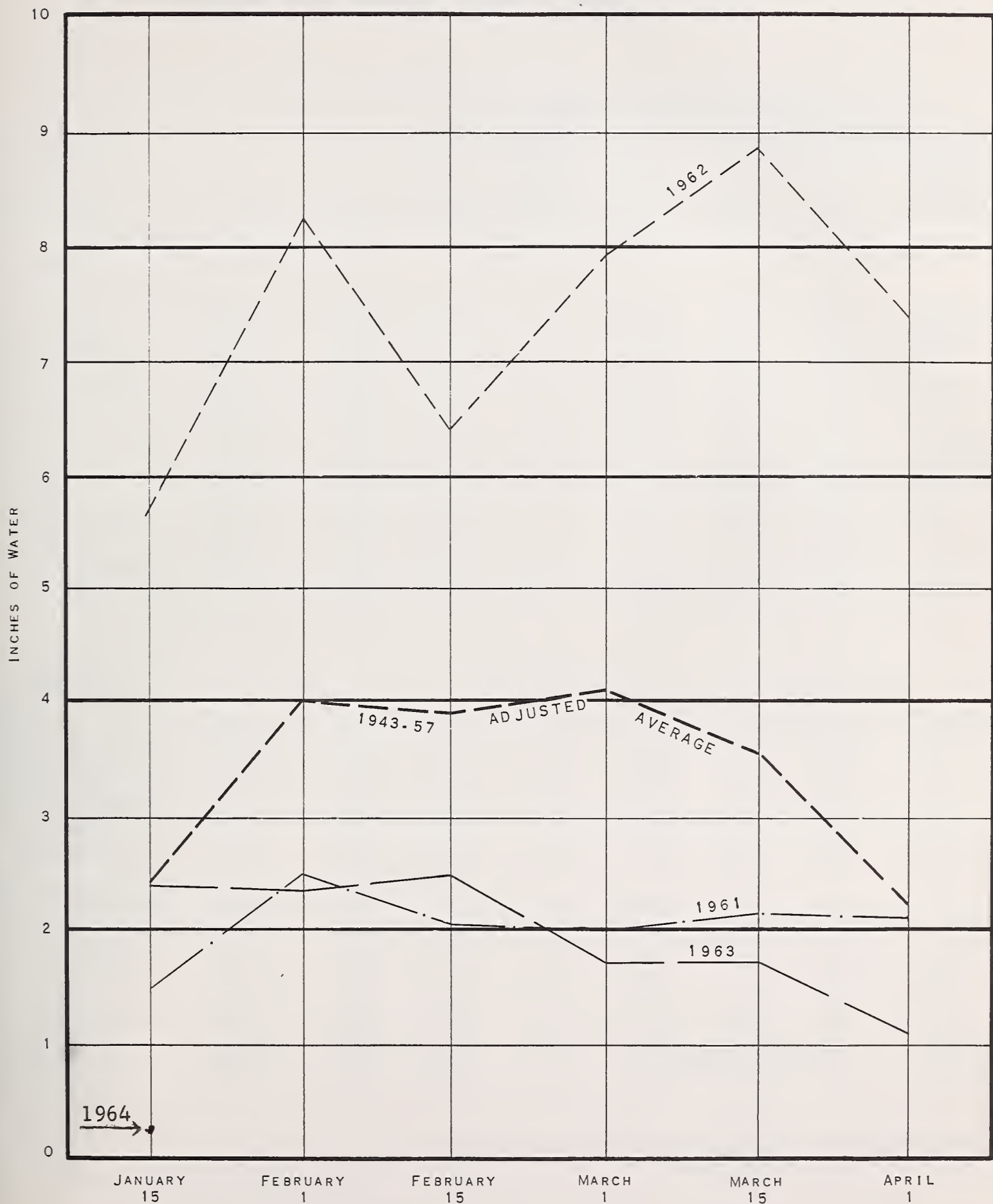
Casner Park	11R2-M	6930	48	19.1	1/14	12.6	12.4	10.4	12.9
Mormon Mountain	11R3-M	7500	48	16.1	1/14	9.4	7.6	7.7	9.7

1/ \* - Soil Moisture Station only  
M - Snow Course and Soil Moisture Station



# RELATIVE SNOW WATER ACCUMULATION ARIZONA

JANUARY 15, 1964



*This graph represents the average snow water content on eleven selected snow courses on Arizona Sub-Watersheds.*





ARIZONA SNOW SURVEYS - ABOUT JANUARY 15, 1964

SUB-WATERSHED and SNOW COURSE			SNOW COVER MEASUREMENTS					
			1964			PAST RECORD		
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (Inches) 1943-57 Average		
No.	Elev.					1963	1962	
<u>GILA RIVER</u>								
Bear Wallow	10T1	8100	1/14	1	0.2	4.7	11.5	2.2 **
Beaver Head	9S6	8000	1/11	0	0.0	2.4	5.8	2.0
Coronado Trail	9S7	8000	1/15	0	0.0	3.1	5.6	1.9
Frisco Divide	8S1-M	8000	1/14	1	0.4	1.2	3.3	1.3
Ice King	8S6	8020	1/15	9	1.9	6.2	5.8	---
Inman	7S2	7800	1/14	0	0.0	1.2	2.1	0.5 **
Mogollon	8S2	7000	1/15	3	1.5	2.0	2.7	0.9 **
Nutrioso	9S4	8500	1/15	0	0.0	0.9	3.7	1.4
Redstone Trail	8S7	8600	1/15	7	1.8	11.5	9.2	---
Rose Canyon	10T2	7300	1/14	1	0.1	3.5	9.6	0.9 **
Silver Creek Div.	8S8	9000	1/15	11	2.8	---	---	---
State Line	9S8	8000	1/14	1	0.1	1.6	3.6	1.5
<u>SALT RIVER</u>								
Baldy *	9S1	9125	1/15	2	0.4	3.6	10.5	3.8 **
Beaver Head	9S6	8000	1/11	0	0.0	2.4	5.8	2.0
Canyon Creek #2	10R7-M	7500	1/14	0	0.0	2.3	3.8	---
Coronado Trail	9S7	8000	1/15	0	0.0	3.1	5.6	1.9
Forest Dale	10R6	6430	1/14	0	0.0	1.5	2.2	0.6
Ft. Apache *	9R5	9160	1/15	6	1.0	4.5	10.8	4.4 **
Gentry	10R5	7600	1/14	0	0.0	2.6	2.9	1.7 **
Hannagan Meadows	9S11	9090	1/11	0	0.0	---	---	---
Heber	10R4	7600	1/14	0	0.0	2.4	4.1	1.7 **
Maverick Fork	9S2	9050	1/15	2	0.4	3.7	11.8	4.9 **
McNary	9R2-M	7200	1/14	0	0.0	2.3	4.7	1.5
Milk Ranch	9R1	7000	1/14	0	0.0	1.6	3.6	0.8
Nutrioso *	9S4	8500	1/15	0	0.0	0.9	3.7	1.4
Pacheta	9S5	7800	1/14	0	0.0	No Survey	7.0	2.4 **
Workman Creek	10S1	6900	1/14	2	0.5	4.5	8.3	3.3 **

\* On Adjacent Drainage

\*\* 1943-57 Adjusted Average



ARIZONA SNOW SURVEYS - ABOUT JANUARY 15, 1964

SUB-WATERSHED and SNOW COURSE			SNOW COVER MEASUREMENTS					
			1964			PAST RECORD		
			Date of Survey	Snow Depth (In.)	Water Content (In.)	Water Content (Inches) 1943-57 Average		
No.	Elev.					1963	1962	
<u>VERDE RIVER</u>								
Camp Wood	12R1	5700	No	Report		0.2	0.4	1.0 **
Casner Park	11R2-M	6930	1/14	0	0.0	1.8	4.8	2.4 **
Chalender	12P1-M	7100	1/14	2	0.5	1.0	2.9	2.5 **
Copper Basin Div.	12R6	6720	1/14	0	0.0	1.6	---	---
Fort Valley	11P2	7350	1/14	0	0.0	0.2	1.4	2.0 **
Gaddes Canyon	12R4	7600	1/14	2	0.3	1.7	4.5	---
Happy Jack	11R5	7630	1/14	0	0.0	T	3.0	2.6 **
Iron Springs *	12R2	6200	1/14	0	0.0	T	1.0	1.5 **
Mingus Mountain	12R3	7100	1/14	0	0.0	1.2	1.5	0.9 **
Mormon Lake *	11R4	7350	1/13	2	0.4	2.1	4.1	2.6 **
Mormon Mountain	11R3-M	7500	1/14	1	0.1	1.9	5.1	3.8 **
Munds Park	11R1-M	6500	1/13	0	0.0	1.3	3.0	1.6 **
Newman Park	11P5-M	6750	1/13	0	0.0	1.6	---	---
Snow Bowl	11P4	10260	1/14	0	0.0	No Survey	6.4	---
White Spar	12R5	6000	1/14	0	0.0	0.0	---	---
<u>BILL WILLIAMS RIVER</u>								
Camp Wood *	12R1	5700	No	Report		0.2	0.4	1.0 **
Copper Basin Div.	12R6	6720	1/14	0	0.0	1.6	---	---
Iron Springs	12R2	6200	1/14	0	0.0	T	1.0	1.5 **
Willow Ranch	13P1	5000	1/14	0	0.0	0.0	0.7	1.0 **
<u>LOWER COLORADO RIVER</u>								
Bright Angel	12N1	8400	No	Report		No Survey		5.2 **
Chalender *	12P1-M	7100	1/14	2	0.5	1.0	2.9	2.5 **
Fort Valley	11P2	7350	1/14	0	0.0	0.2	1.4	2.0 **
Grand Canyon	11P1	7500	1/14	0	0.0	1.1	2.3	1.9 **
<u>LITTLE COLORADO RIVER</u>								
Baldy	9S1	9125	1/15	2	0.4	3.6	10.5	3.8 **
Canyon Creek #2	10R7-M	7500	1/14	0	0.0	2.3	3.8	---
Forest Dale	10R6	6430	1/14	0	0.0	1.5	2.2	0.6
Ft. Apache	9R5	9160	1/15	6	1.0	4.5	10.8	4.4 **
Fort Valley	11P2	7350	1/14	0	0.0	0.2	1.4	2.0 **
Gentry	10R5	7600	1/14	0	0.0	2.6	2.9	1.7 **
Happy Jack *	11R5	7630	1/14	0	0.0	T	3.0	2.6 **
Heber	10R4	7600	1/14	0	0.0	2.4	4.1	1.7 **
McNary	9R2-M	7200	1/14	0	0.0	2.3	4.7	1.5
Mormon Lake	11R4	7350	1/13	2	0.4	2.1	4.1	2.6 **
Mormon Mountain	11R3-M	7500	1/14	1	0.1	1.9	5.1	3.8 **
Nutriosio	9S4	8500	1/15	0	0.0	0.9	3.7	1.4
Snow Bowl	11P4	10260	1/14	0	0.0	No Survey	6.4	---

\* On Adjacent Drainage

\*\* 1943-57 Adjusted Average





PRECIPITATION AT SELECTED ARIZONA STATIONS \*

STATION	Precipitation (Inches)			
	December - 1963		Current Water-Year (Oct. 1963 - Dec. 1963)	
	Total	Departure from Normal	Total	Departure from Normal
Alpine	.15	- 1.12	4.08	+ .28
Ash Fork	.20	- .98	2.86	+ .26
Clifton	.05	- .97	2.30	- .16
Douglas Smelter	.32	- .35	1.71	- .06
Flagstaff WBAS **	.36	- 1.29	3.00	- 1.17
Payson Ranger Station	.25	- 1.65	5.65	+ .90
Phoenix WBAS	T	- .85	2.19	+ .39
Prescott WBAS	.01	- .99	1.99	- .24
Springerville	.05	- .44	1.64	- .09
Tucson WBAS	.08	- .84	1.94	- .24
Winslow WBAS	.31	- .21	1.72	+ .18
Yuma WBAS	--	- .32	1.11	+ .29

\*\* WBAS = Weather Bureau Airport Station

\* Data and Analysis furnished by Paul C. Kangieser,  
Arizona State Climatologist, U. S. Weather Bureau,  
Phoenix, Arizona.



# LIST OF SNOW SURVEYORS

<u>SNOW COURSE</u>	<u>SURVEYOR</u>
Baldy -----	SCS and SRVWUA
Bear Wallow -----	Forest Service - Allan Hinds
Beaver Head -----	N. A. Josh
Bright Angel -----	National Park Service - Vern Ruesch
Camp Wood -----	Lyn Pehl
Canyon Creek #2 -----	SCS and SRVWUA
Casner Park -----	SCS and SRVWUA
Chalender -----	Forest Service - Mel Richards
Copper Basin Divide ---	SCS - Bill Gray
Coronado Trail -----	Forest Service - R.P. Julander & W.L. Sanders
Forest Dale -----	Fort Apache Reservation - Boyer & Endfield
Ft. Apache -----	SCS and SRVWUA
Fort Valley -----	Rocky Mountain Forest & Range Experiment Station
Frisco Divide -----	Forest Service - Joe Clayton
Gaddes Canyon -----	SCS - Bill Gray
Gentry -----	SCS and SRVWUA
Grand Canyon -----	National Park Service - Paul Mathis
Hannagan Meadows -----	N. A. Josh
Happy Jack -----	Emil O. Ryberg
Heber -----	SCS and SRVWUA
Hummingbird -----	Ray Freeman
Ice King -----	James R. Wray
Inman -----	C. H. McCauley
Iron Springs -----	Ernest Saxby
Maverick Fork -----	SCS and SRVWUA
McNary -----	Fort Apache Reservation - Boyer & Endfield
Milk Ranch-----	Fort Apache Reservation - Boyer & Endfield
Mingus Mountain -----	SCS - Bill Gray
Mogollon -----	James R. Wray
Mormon Lake -----	SCS and SRVWUA
Mormon Mountain -----	SCS and SRVWUA
Munds Park-----	SCS and SRVWUA
Newman Park -----	SCS and SRVWUA
Nutriosos -----	Forest Service - R.P. Julander & W.L. Sanders
Pacheta-----	Foch Phillips
Redstone Trail -----	James R. Wray
Rose Canyon -----	Forest Service - Allan Hinds
Silver Creek Divide ---	James R. Wray
Snow Bowl -----	Forest Service - Jay Shoemaker
State Line -----	Forest Service - Joe Clayton
White Spar-----	SCS - Bill Gray
Whitewater -----	Ray Freeman
Willow Ranch -----	Tiny Miller
Workman Creek -----	Rocky Mountain Forest & Range Experiment Station





# The Following Organizations Cooperate in the Arizona Snow Survey Work

## FEDERAL

Department of Agriculture

Soil Conservation Service

Forest Service

Apache Forest

Coconino Forest

Coronado Forest

Gila Forest

Kaibab Forest

Prescott Forest

Rocky Mountain Forest and Range Experiment Station

Tonto Forest

Department of Commerce

Weather Bureau

Arizona Section

Department of Interior

Bureau of Reclamation

Region III

Geological Survey

Arizona District

Bureau of Indian Affairs

Fort Apache Reservation

San Carlos Irrigation Project

National Park Service

Grand Canyon National Park

Gila Water Commissioner

Safford, Arizona

## STATE

Arizona Agricultural Experiment Station

## IRRIGATION PROJECTS

Salt River Valley Water Users' Association

Phoenix, Arizona

San Carlos Irrigation and Drainage District

Coolidge, Arizona

## PRIVATE

Southwest Forest Industries, Inc.

McNary, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
ROOM 16029 FEDERAL BUILDING  
PHOENIX, ARIZONA 85025

OFFICIAL BUSINESS

POSTAGE AND FEES PAID  
U. S. DEPARTMENT OF AGRICULTURE

**FIRST CLASS MAIL**

FEDERAL - STATE - PRIVATE  
**COOPERATIVE SNOW SURVEYS**

Furnishes the basic data  
necessary for forecasting  
water supply for irrigation,  
domestic and municipal water  
supply, hydro-electric power  
generation, navigation,  
mining and industry

*"The Conservation of Water begins  
with the Snow Survey"*